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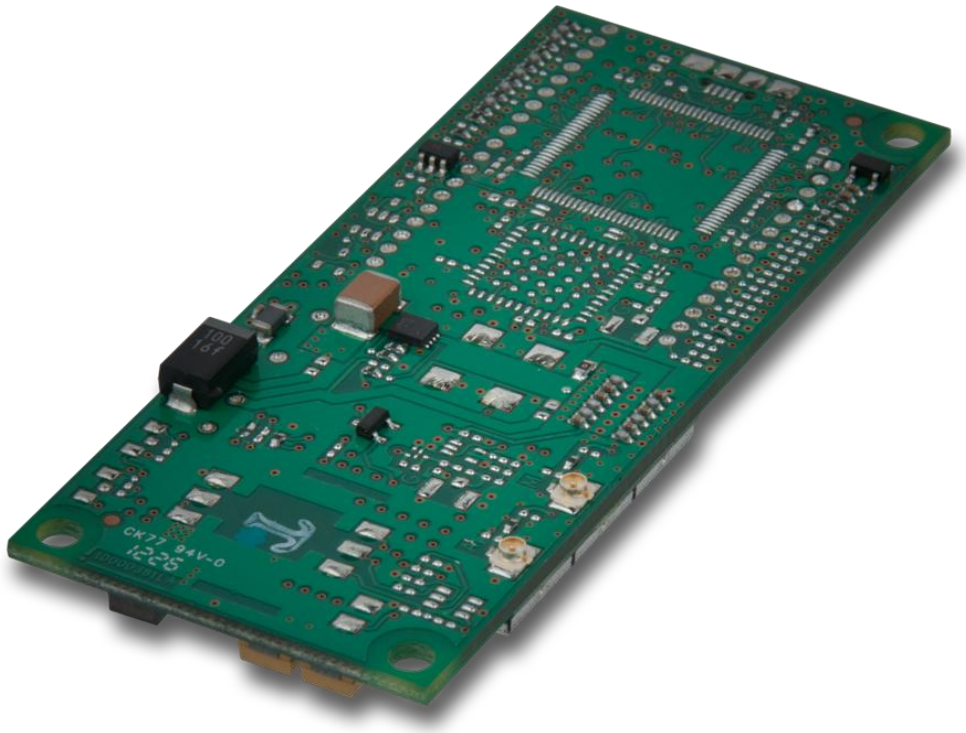

SocketModem® Cell EV-DO
SocketModem® iCell EV-DO

MTSMC-EV3 Device Guide

SocketModem SocketModem Cell EV-DO and SocketModem iCell EV-DO
MTSMC-EV3 Device Guide

S000541, Version F

MTSMC-EV3-xx, MTSMC-EV3-MI-GP-xx, MTSMC-EV3-MI-IP-xx, MTSMC-EV3-GP-xx, MTSMC-EV3-IP-xx, MTSMC-EV3-U-xx

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Warranty

To read the warranty statement for your product, please visit: http://www.multitech.com/warranty.go.

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Chapter 1 – Device Overview

Description

The SocketModem iCell intelligent cellular modem is a complete, ready-to-integrate communications device that offers standards-based dual-band EV-DO Rev A performance. This quick-to-market communications device allows developers to add wireless communication and GPS tracking to products with a minimum of development time and expense. The intelligence of the embedded Universal IP® stack allows for automatic/persistent connectivity for mission critical applications and enhanced M2M functionality. The SocketModem iCell intelligent cellular modem is based on industry-standard open interfaces and uses Multi-Tech's Universal Socket design.

Product Build Options

Product	Description	Region
MTSMC-EV3-MI-GP-N3	EV-DO Rev A, Serial, USB, GPIO, Universal IP, GPS, Verizon	USA
MTSMC-EV3-MI-GP-N16	EV-DO Rev A, Serial, USB, GPIO, Universal IP, GPS, Aeris	USA
MTSMC-EV3-MI-IP-N3	EV-DO Rev A, Serial, USB, GPIO, Universal IP, Verizon	USA
MTSMC-EV3-MI-IP-N16	EV-DO Rev A, Serial, USB, GPIO, Universal IP, Aeris	USA
MTSMC-EV3-GP-N3	EV-DO Rev A, Serial, Universal IP, GPS, Verizon	USA
MTSMC-EV3-GP-N16	EV-DO Rev A, Serial, Universal IP, GPS, Aeris	USA
MTSMC-EV3-IP-N3	EV-DO Rev A, Serial, Universal IP, Verizon	USA
MTSMC-EV3-IP-N16	EV-DO Rev A, Serial, Universal IP, Aeris	USA
MTSMC-EV3-N3	EV-DO Rev A, Serial, Verizon	USA
MTSMC-EV3-N16	EV-DO Rev A, Serial, Aeris	USA
MTSMC-EV3-U-N3	EV-DO Rev A, USB, Verizon	USA
MTSMC-EV3-U-N16	EV-DO Rev A, USB, Aeris	USA
Developer Kit		
MTSMI-UDK	Universal Developer Kit	Global

Notes:

These units ship without network activation. To connect them to the cellular network, you need a cellular account. Refer to Multi-Tech's Cellular Activation site http://www.multitech.com/activation.go for step-by-step instructions on activating your cellular modem.

GP devices have a dedicated GPS receiver.

MI devices have multiple interfaces.

The complete product code may end in .Rx. For example, MTSMC-EV3.Rx, where R is revision and x is the revision number.

All builds can be ordered individually or in 50-packs.

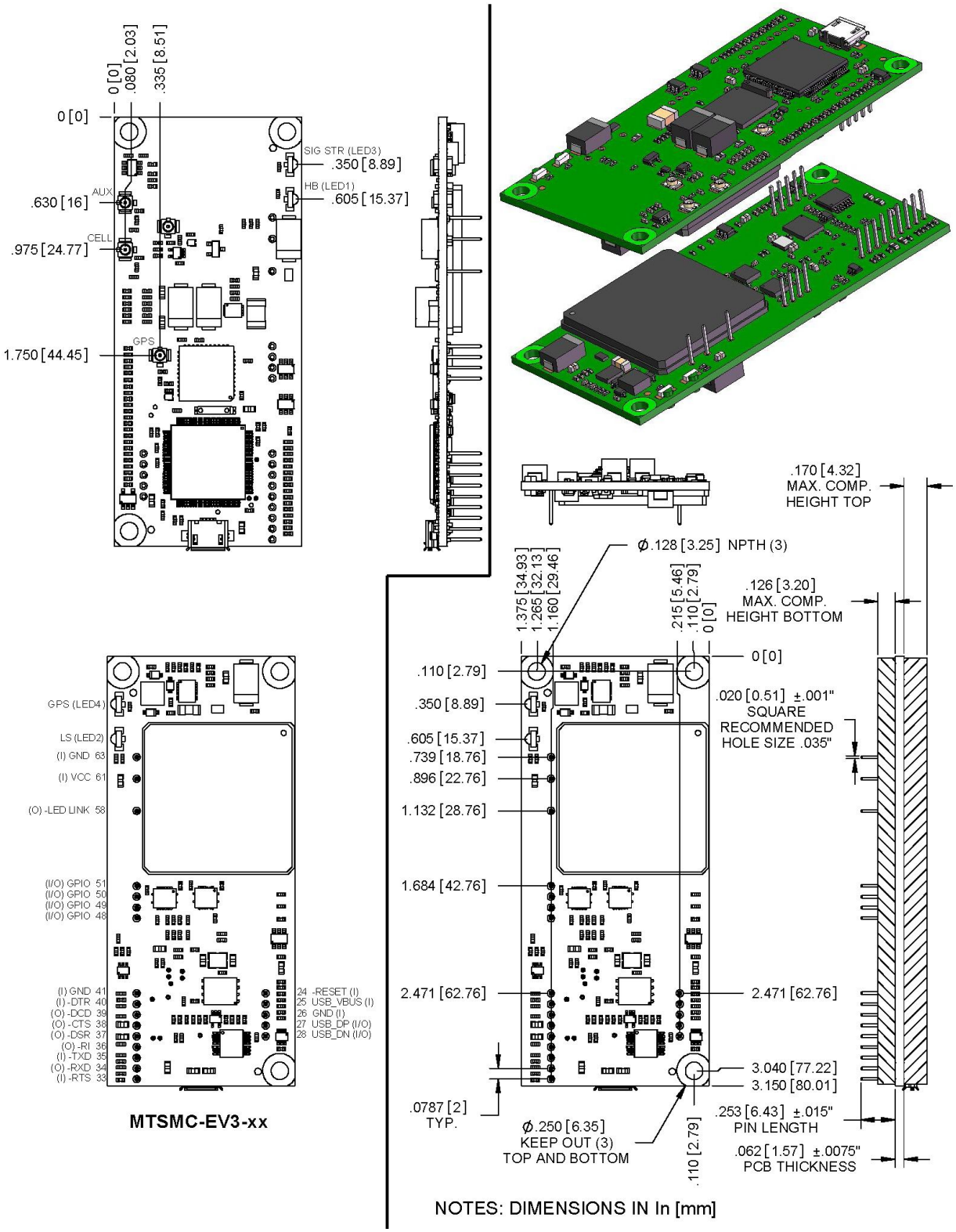
Documentation

The following documentation is available by email to oemsales@multitech.com or by using the Developer Guide Request Form on the multitech.com

- **Device Guides** – This document. Provides model-specific specifications and developer information.
- **Universal Socket Developer Guide** – Provides an overview, safety and regulatory information, design considerations, schematics, and general device information. (S000342)
- **USB Driver Installation Guide** – Provides steps for installing EV-DO/CDMA USB drivers. (S000569)
- **AT Command Guide** – Use the following AT Command Guides with EV-DO devices:
  - S000546 for EV-DO and CDMA Modems
  - S000457 Universal IP Commands

Chapter 2 – Mechanical Drawing

MTSMC-EV3 Builds



Chapter 3 – Specifications

Technical Specifications

Category	Description
General	
Standards	CDMA2000 1xRTT EV-DO Rev. A (backward compatible to EV-DO Rev. 0 and CDMA 1x networks) SMS is based on CS/Packet-Switched (PS) domain of GSM and WCDMA
Frequency Bands	Dual-band 800/1900 MHz bands with receive diversity support on both bands
Speed	
Data Speed	Up to 3.1 Mbps downlink/1.8 Mbps uplink
Interface, Ports	
USB Interface	MI builds: USB 2.0 full speed High speed on other builds: 480 Mbps
Serial Modem Interface	Up to 921.6 Kbps
Ports	GPIO ports – MI builds only
Physical Description	
Weight	1 oz. (28g)
Dimensions	3.15" x 1.375" (80.010 mm x 34.925 mm)
Connectors	
Antenna Connector	3 surface mount UFL: cellular, GPS, RX diversity
Environment	
Operating Temperature	-40° C to +85° C
Storage Temperature	-40° C to +85° C
Humidity	20%-90% RH, non-condensing
Power Requirements	
Operating Voltage	3.3V-5V
Input Power	5 or 3.3 VDC
IP, M2M, SMS	
Supported IP Protocols	DNS resolve, FTP client, Ping, POP3 client, PPP (dialout), SMTP client, TCP RAW client & server
M2M Applications	iCell models: Automatic connect/reconnect, device monitor, modem emulation, Ping & TCP keep alive, wake-up on caller ID, wake-up on ring, GPS tracking (GP model only)
SMS	Point-to-Point messaging Mobile-Terminated SMS Mobile-Originated SMS

Category	Description
Certifications, Compliance	
EMC Compliance	FCC Part 15 Class B EN55022 Class B EN55024
Radio Compliance	FCC Part 22 FCC Part 24 RSS 132 RSS 133 EN 301 511 EN 301 489-1 EN 301 489-7 EN 301 489-24
Safety Compliance	UL 60950-1 cUL 60950-1 EN 60590-1
Network Compliance	Verizon, Aeris

Notes: Radio performance may be affected by temperature extremes. This is normal.

Mounting Hardware

The board has three mounting holes at corners. Use #4 or M3 hardware for mounting the SocketModem to the board. Refer to the Mechanical Drawings for more information.

Recommended Parts

Manufacturer	Part	Part Number
PEM PennEngineering	Surface Mount Standoff	SMTSO-M3-4ET
RAF Electronic Hardware	3/16” Hex Female Standoff	2051T-440-S-12 Zinc
RAF Electronic Hardware	4.5mm Hex Female Standoff	1251-3005-S-12 Zinc

Device Reset

The SocketModem is ready to accept commands after a fixed amount of time (“X” Time) after power-on or reset.

Model	"X" Time	Minimum Reset Pulse[1]
MTSMC-EV3	10 seconds	200 us

[1]The SocketModem may respond to a shorter reset pulse.

RS-232 Signal DC Electrical Characteristics

Units: Volts

Applies to the following pins:

Pin	Signal Name	Pin	Signal Name
J33	-RTS	J37	-DSR
J34	-RXD	J38	-CTS
J35	-TXD	J39	-DCD
J36	-RI	J40	-DTR

Parameter	Minimum	Maximum
3.3 Volt Powered		
Input Low Level	0	0.55
Input High Level	1.5	3.3
Output Low Level	0	0.55
Output High Level	2.35	3.3
5 Volt Powered		
Input Low Level	0	0.8
Input High Level	2.3	5
Output Low Level	0	0.55
Output High Level	3.7	5

Absolute Maximum Rating

All models can run with an input voltage of either 3.3V or 5V. The maximum voltage on any signal pin equals the input voltage.

Electrical Characteristics Other Pins

Pin	Signal Name	VIL		VIH		VOL		VOH	
		Min	Max	Min	Max	Min	Max	Min	Max
J24	-RESET		0.8	2.0		--	--	--	--
J25	USB VBUS	-0.3	0.8	2.0	8.7	--	--	--	--
J26	GND	--	--	--	--	--	--	--	--
J27	USB DP		0.8	2			0.3	2.8	
J28	USB DM		0.8	2			0.3	2.8	
J41	GND	--	--	--	--	--	--	--	--
J48	GPIO0	-0.3	0.8	2.0	5.5		0.4	2.9	
J49	GPIO1	-0.3	0.8	2.0	5.5		0.4	2.9	
J50	GPIO2	-0.3	0.8	2.0	5.5		0.4	2.9	
J51	GPIO3	-0.3	0.8	2.0	5.5		0.4	2.9	
J58	-LED LINK	--	--	--	--	0	0.45	2.85	3.3
J61	VCC	--	--	--	--	--	--	--	--
J63	GND	--	--	--	--	--	--	--	--

Pinout Specifications

Pin	Signal Name	Logic Level Voltage[1]	I/O	Description
J24	–RESET	3.3 – 5.0	I	Device reset (active low)
J25	USB VBUS	3.3 – 5.0	I	USB power supply input
J26	GND	GND	GND	Ground
J27	USB DP	3.3	I/O	USB data
J28	USB DN	3.3	I/O	USB data
J33	–RTS	5.0	I	Request to send (active low)
J34	–RXD	5.0	O	Received data (active low)
J35	–TXD	5.0	I	Transmitted data (active low)
J36	–RI	5.0	O	Ring indicator (active low)
J37	–DSR	5.0	O	Data set ready (active low)
J38	–CTS	5.0	O	Clear to send (active low)
J39	–DCD	5.0	O	Data carrier detect (active low)
J40	–DTR	5.0	I	Data terminal ready (active low)
J41	GND	GND	GND	Ground
J48	GPIO0	3.3	I/O	User configurable general purpose I/O
J49	GPIO1	3.3	I/O	User configurable general purpose I/O
J50	GPIO2	3.3	I/O	User configurable general purpose I/O
J51	GPIO3	3.3	I/O	User configurable general purpose I/O
J58	–LED LINK	3.3	O	Link status (active low, can sink up to 150mA)
J61	VCC	5.0	PWR	DC input power
J63	GND	GND	GND	Ground

1 A hyphen (-) indicates a range of acceptable logic levels.

Pin 58

Note: Pin 58 may or may not be available on some SocketModems.

Pin 58 LED Mode	Operating Status	
OFF	Subscriber Carrier Mode is OFF or running in SLEEP or ALARM mode.	
600 ms ON/600ms OFF	No PIN entered, network search in progress, ongoing user authentication, or network login in progress.	
75 ms ON / 75 ms OFF / 75 ms ON 3 s OFF Flashing or Blinking	One or more EDGE/GPRS/CDMA contexts activated. Indicates EDGE/GPRS/CDMA data transfer: When a transfer is in progress, the LED goes on within 1 second after data packets were exchanged. Flash duration is approximately 0.5 s.	
ON	Depending on call type:	
	Voice Call:	Connected to remote party.
	Data Call:	Connected to remote party or parameter exchange while call is set up or disconnected.

Pin Availability by Build

Pin and Function	MI-IP/GP	IP/GP	Serial only	USB only
J24 Reset	x	x	x	x
J25 USB_VBUS	x			x
J26 GND	x	x	x	x
J27 USB_DP	x			x
J28 USB_DN	x			x
J33 -RTS	x	x	x	
J34 -RXD	x	x	x	
J35 -TXD	x	x	x	
J36 -RI	x	x	x	
J37 -DSR	x	x	x	
J38 -CTS	x	x	x	
J39 -DCD	x	x	x	
J40 -DTR	x	x	x	
J41 GND	x	x	x	x
J48 GPIO	x			
J49 GPIO	x			
J50 GPIO	x			
J51 GPIO	x			
J58 -LED LINK	x			x
J61 VCC	x	x	x	x
J63 GND	x	x	x	x

Power Measurements

Multi-Tech Systems, Inc. recommends that you incorporate a 10% buffer into your power source when determining product load.

MTSMC-EV3

Radio Protocol	AT command used to set radio function and power mode	Sleep mode current (Amps)	Time (sec) to reduce power from command or DTE signal change	Time (sec) to "ready for data connection" from reduced power
3.3 Volts				
US Cellular	AT+CFUN=5	0.046	1.0	1.0
PCS	AT+CFUN=5	N/A	N/A	N/A
EV-DO	AT+CFUN=5	0.023	1.0	1.0
5 Volts				
US Cellular	AT+CFUN=5	0.049	1.0	1.0
PCS	AT+CFUN=5	N/A	N/A	N/A
EV-DO	AT+CFUN=5	0.022	1.0	1.0

Radio Protocol	AT command used to set radio function and power mode	Connection No Data (Amps)	Half Power			Max Power		
			Average Measured Current (Amps)	Output Power Level	Ch Power Meas. (Avg)	Average Measured Current (Amps)	Output Power Level	Ch Power Meas. (Avg)
3.3 Volts								
US Cellular	AT+CFUN=1	0.062	0.205	-13	-60	0.855	22	-97
PCS	AT+CFUN=1	N/A	0.189	-16	-60	0.956	20	-99
EV-DO	AT+CFUN=1	0.049	0.205	-25	-70	0.664	21	-96
5 Volts								
US Cellular	AT+CFUN=1	0.053	0.143	-13	-60	0.53	21	-60
PCS	AT+CFUN=1	N/A	0.134	-16	-60	0.617	21	-60
EV-DO	AT+CFUN=1	0.034	0.141	-25	-70	0.423	21	-70

Note: This data is measured using an Agilent call box connected to the cellular radio.

Radio Protocol	Instant Peak TX Current (Amps)	Total Inrush Charge measured in Coulombs	Inrush Duration (Total Inrush Charge duration during powerup).
3.3 Volts			
US Cellular	0.956	17.70mC	1.90ms
PCS	1.084	17.70mC	1.90ms
EV-DO	0.744	17.70mC	1.90ms
5 Volts			
US Cellular	0.608	17.77mC	1.74ms
PCS	0.696	17.77mC	1.74ms
EV-DO	0.496	17.77mC	1.74ms

Notes:

- AT+CFUN=1 used to set radio function and power mode.
- **Instant Peak Tx:** The peak current during a transmission burst period or connection. This current is handled by bulk capacitance in a design.
- **Measured Current:** The continuous current during a Transmit with the radio transmitter at specified power.
- **Inrush Charge:** The total inrush charge current amplitude at power on.

MTSMC-EV3-U

Radio Protocol	AT command used to set radio function and power mode	Connection No Data (Amps)	Half Power			Max Power		
			Average Measured Current (Amps)	Output Power Level	Ch Power Meas. (Avg)	Average Measured Current (Amps)	Output Power Level	Ch Power Meas. (Avg)
3.3 Volts								
US Cellular	AT+CFUN=1	0.062	0.220	-13	-60	0.845	22.7	-96.2
PCS	AT+CFUN=1	N/A	0.201	-16	-60	0.878	21	-99.1
EV-DO	AT+CFUN=1	0.057	0.218	-26	-70	0.690	23	-96
5 Volts								
US Cellular	AT+CFUN=1	0.056	0.146	-13	-60	0.521	22	-60
PCS	AT+CFUN=1	N/A	0.133	-16	-60	0.541	22	-99
EV-DO	AT+CFUN=1	0.043	0.145	-25	-70	0.436	22	-96

Note: This data is measured using an Agilent call box connected to the cellular radio.

Radio Protocol	Instant Peak TX Current (Amps)	Total Inrush Charge measured in Coulombs	Inrush Duration (Total Inrush charge duration during powerup).
3.3 Volts			
US Cellular	0.920	18.23mC	1.91ms
PCS	0.936	18.23mC	1.91ms
EV-DO	0.768	18.23mC	1.91ms
5 Volts			
US Cellular	0.604	17.90mC	1.82ms
PCS	0.624	17.90mC	1.82ms
EV-DO	0.508	17.90mC	1.82ms

Notes:

- AT+CFUN=1 used to set radio function and power mode.
- **Instant Peak Tx:** The peak current during a transmission burst period or connection. This current is handled by bulk capacitance in a design.
- **Measured Current:** The continuous current during a Transmit with the radio transmitter at specified power.
- **Inrush Charge:** The total inrush charge current amplitude at power on.

MTSMC-EV3-MI-IP

Radio Protocol	AT command used to set radio function and power mode	Connection No Data (Amps)	Half Power	Max Power
			Average Measured Current (Amps)	Average Measured Current (Amps)
3.3 Volts				
US Cellular	AT+CFUN=1	0.140	0.302	0.890
PCS	AT+CFUN=1	N/A	0.285	1.041
EV-DO	AT+CFUN=1	0.124	0.304	0.818
5 Volts				
US Cellular	AT+CFUN=1	0.090	0.190	0.580
PCS	AT+CFUN=1	N/A	0.180	0.616
EV-DO	AT+CFUN=1	0.083	0.187	0.485

Note: This data is measured using an Agilent call box connected to the cellular radio.

Radio Protocol	Instant Peak TX Current (Amps)	Total Inrush Charge measured in Coulombs	Inrush Duration (Total Inrush charge duration during powerup).
3.3 Volts			
US Cellular	1.056	15.37mC	1.84ms
PCS	1.276	15.37mC	1.84ms
EV-DO	1.12	15.37mC	1.84ms
5 Volts			
US Cellular	0.664	15.37mC	1.84ms
PCS	0.752	15.37mC	1.84ms
EV-DO	0.644	15.37mC	1.84ms

Notes:

- AT+CFUN=1 used to set radio function and power mode.
- **Instant Peak Tx:** The peak current during a transmission burst period or connection. This current is handled by bulk capacitance in a design.
- **Measured Current:** The continuous current during a Transmit with the radio transmitter at specified power.
- **Inrush Charge:** The total inrush charge current amplitude at power on.

MTSMC-EV3-MI-GP

Radio Protocol	AT command used to set radio function and power mode	Connection No Data (Amps)	Half Power			Max Power		
			Average Measured Current (Amps)	Output Power Level	Ch Power Meas. (Avg)	Average Measured Current (Amps)	Output Power Level	Ch Power Meas. (Avg)
3.3 Volts								
US Cellular	AT+CFUN=1	0.270	0.412	-13	-60	1.000	22	-97
PCS	AT+CFUN=1	N/A	0.395	-16	-60	1.151	20	-99
EV-DO	AT+CFUN=1	0.240	0.414	-25	-70	0.928	21	-96
5 Volts								
US Cellular	AT+CFUN=1	0.173	0.270	-13	-60	0.660	22	-95
PCS	AT+CFUN=1	N/A	0.260	-16	-60	0.696	21	-60
EV-DO	AT+CFUN=1	0.161	0.267	-25	-70	0.565	23	-70

Note: This data is measured using an Agilent call box connected to the cellular radio.

Radio Protocol	Instant Peak TX Current (Amps)	Total Inrush Charge measured in Coulombs	Inrush Duration (Total Inrush charge duration during powerup).
3.3 Volts			
US Cellular	1.056	15.37mC	1.84ms
PCS	1.276	15.37mC	1.84ms
EV-DO	1.12	15.37mC	1.84ms
5 Volts			
US Cellular	0.664	15.74mC	1.75ms
PCS	0.752	15.74mC	1.75ms
EV-DO	0.644	15.74mC	1.75ms

Notes:

- AT+CFUN=1 used to set radio function and power mode.
- **Instant Peak Tx:** The peak current during a transmission burst period or connection. This current is handled by bulk capacitance in a design.
- **Measured Current:** The continuous current during a Transmit with the radio transmitter at specified power.
- **Inrush Charge:** The total inrush charge current amplitude at power on.

Chapter 4 – FCC and Industry Canada Information

The following is device specific FCC information. For additional approval and regulatory information, see the Universal Socket Developer Guide.

FCC Grant Part 22 and 24

FCC Identifier	RI7DE910-DUAL
Equipment Class	PCS Licensed Transmitter
Notes	Dual Band CDMA/GPS module
FCC Rule Parts	22H, 24E
Approval	Single Modular

FCC Rule Parts	Frequency Range (MHz)	Output Watts	Frequency Tolerance	Emission Designators
22H	824.7 - 848.31	0.3	2.5 PM	1M29F9W
24E	1851.25-1908.75	0.274	2.5 PM	1M29F9W

Power listed is conducted. The maximum antenna gain including cable loss for compliance with radiated power limits, RF exposure requirements and the categorical exclusion requirements of 2.1091 is 5.12 dBi for part 22H and 6.12 dBi for part 24E. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not transmit simultaneously with any other antenna or transmitter. This device is allowed only for OEM integration into host products. Consumer or end-user installation is not allowed. End-users and OEM integrators must be provided with specific information required to satisfy RF exposure compliance.

Industry Canada

Certification Number/No. de Certification	5131A-DE910Dual
Certificate Number/Numéro de Certificat	1-03726
Type of Radio Equipment/Genre de Matériel	Cellular Mobile New Technologies (824-849MHz)
Model/Modele	DE910-DUAL

From Frequency/ De Fréquences	To Frequency/ Á Fréquences	Emission Designation/Genre d'émission	Power/Puisaance (Watts)
827.7	848.31	1M28F9W	0.298
1851.25	1908.75	1M29F9W	0.274

Certification of equipment means only that the equipment has met the requirements of the above noted specification. License applications, where applicable to use certified equipment, are acted on accordingly by the Industry Canada issuing office and will depend on the existing radio environment, service and location of operation. This certificate is issued on condition that the holder complies and will continue to comply with the requirements and procedures issued by Industry Canada. The equipment for which this certificate is issued shall not be manufactured, imported distributed, leased, offered for sale or sold unless the equipment complies with the applicable technical specifications and procedures issued by Industry Canada.

La certification du matériel signifie seulement que le matériel a satisfait aux exigences de la norme indiquée ci-dessus. Les demandes de licences nécessaires pour l'utilisation du matériel certifié sont traitées en conséquence par le bureau de délivrance d'Industrie Canada et dépendent des conditions radio ambiantes, du service et de l'emplacement d'exploitation. Le présent certificat est délivré à la condition que le titulaire satisfasse et continue de satisfaire aux exigences et aux procédures d'Industrie Canada. Le matériel à l'égard duquel le présent certificat est délivré ne doit pas être fabriqué, importé, distribué, loué, mis en vente ou vendu à moins d'être conforme aux procédures et aux spécifications techniques applicable publiées par Industrie Canada.

Chapter 5 – Carrier Specific Information

Notice for Devices that Use Aeris Radios

One component of your device is a radio. A radio algorithm prevents your device from repeatedly attempting to connect to the network when the radio:

- cannot establish a packet data connection or
- fails to access the application server.

When writing applications for your devices, ensure that your applications do not interfere with the radio's connection retry algorithm. If you fail to do so, Aeris might block network access for your devices.

After your devices reach the end of their commercial lifespan, you must remove them from the Aeris network. To do so, remove power from the devices and remove their antennas. If your devices continue to attempt to register with the network after you cancel device subscriptions, Aeris can bill you for any traffic generated by those devices.

Chapter 6 – Application Notes

LED Interface

The LED signal indicates the SocketModem working status. Refer to the mechanical drawing for LED locations.

LED 1 – Heartbeat – IP and –GP Builds Only

LED 1 Signal	Heartbeat LED
OFF	No power to the unit.
Blinking	Power on.

LED 2 – Link Status – All Builds

LED 2 Signal	Link Status LED	
OFF	Device off.	
ON	Continuously lit	During initial connection to tower or when connected and passing data.
	Slow blink (-0.2Hz)	Registered to tower and idle.
	Faster blink (-3Hz)	Powered not registered/Searching for registration.

Note:

For non-IP builds, to ensure that the Link Status LED works properly, issue the following AT Command sequence to the GPIO:

AT#GPIO=1,0,2

AT#SLED=2

LED 3 – Signal Strength –IP and –GP Builds Only

LED 1 Signal	Heartbeat LED
OFF	No signal
Blinking	The faster the LED blinks, the stronger the signal. The blink rate range is -0.5Hz to -10Hz.

LED 4 – GPS Status – GP Builds

LED 4 Signal	GPS Status LED	
OFF	No power to the unit.	
ON	Continuously lit	Satellite not acquired.
	Blinking	Satellite acquired.

RF Performances

RF performances are compliant with the ETSI recommendation 05.05 and 11.10. The module's radio transceiver meets the requirements of 3GPP Release 5 & 6. All values indicated are conducted.

Receiver Features

Category	Description
GSM 850 Sensitivity	< -109 dBm
E-GSM 900 Sensitivity	< -106 dBm
DCS 1800 Sensitivity	< -105 dBm
PCS 1900 Sensitivity	< -105 dBm
UMTS Band I 2100 Sensitivity	< -109 dBm
UMTS Band II 1900 Sensitivity	< -108 dBm
UMTS Band V 850 Sensitivity	< -110 dBm
UMTS Band VI 800 Sensitivity	< -110 dBm

Transmitter Features

Category	Description
Maximum output power (GSM 850 / GSM 900)	+32 dBm ± 1 dBm GSMK mode (class 4) +27 dBm ± 1 dBm 8PSK mode (class E2)
Maximum output power (DCS 1800 / PCS 1900)	+29 dBm ± 1 dBm GSMK mode (class 1) +26 dBm ± 1 dBm 8PSK mode (class E2)
Maximum output power (UMTS Band II 1900, V 850, &VI 800)	+23 dBm ± 1 dBm (class 3)
Maximum output power (UMTS Band I 2100)	+23 dBm ± 1 dBm (class 3)

RF Connection and Antenna

The RF connector on the SocketModem is a UFL standard type. See the Universal Socket Developer Guide for antenna details.

Frequency Bands

Mode	Freq. TX (MHz)	Freq. RX (MHz)	Channels	TX - RX offset
GSM850	824.2- 848.8	869.2 - 893.8	128 - 251	45 MHz
EGSM900	890.0 - 914.8	935.0 - 959.8	0 - 124	45 MHz
	880.2 - 889.8	925.2 - 934.8	975 - 1023	45 MHz
DCS1800	1710.2 - 1784.8	1805.2 - 1879.8	512 - 885	95MHz
PCS1900	1850.2 - 1909.8	1930.2 - 1989.8	512 - 810	80MHz
WCDMA850 (band V)	826.4 - 846.6	871.4 - 891.6	Tx: 4132 - 4233 Rx: 4357 - 4458	45MHz
WCDMA900 (band VIII)	882.4 - 912.6	927.4 - 957.6	Tx: 2712 - 2863 Rx: 2937 - 3088	45MHz
WCDMA1700 (band IV)	1710.4 - 1755.6	2112.4 - 2167.6	Tx: 1312 - 1513 Rx: 9662 - 9938	400MHz
WCDMA1900 (band II)	1852.4 - 1907.6	1932.4 - 1987.6	Tx: 9262 - 9538 Rx: 9662 - 9938	80MHz
WCDMA2100 (band I)	1922.4 - 1977.6	2112.4 - 2167.6	Tx: 9612 - 9888 Rx: 10562 - 10838	190MHz